Application Number 09/781,655

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IN THE CLAIMS

Claims 16-30 are pending.

Claims 27-30 are withdrawn from consideration.

Please cancel claims 16-26 without prejudice or disclaimer of the subject matter claimed therein.

Please add new claims 31 - 46:

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31. A method of determining the sequence of a target nucleic acid in a sample, comprising the steps of:

(a) providing at least one solid phase particle having a transponder, the particle having an oligonucleotide probe attached directly or indirectly to an outer surface, and the transponder comprising of memory elements containing data indicating the sequence of the oligonucleotide probe, a radio-frequency transmitter and a photovoltaic cell providing a source of electrical power for the memory elements and transmitter when illuminated by light;

(b) contacting the solid phase particle with the sample to form a sample mixture;

(c) providing conditions allowing annealing of at least a portion of the sequence of the target nucleic acid to a complementary sequence on the oligonucleotide probe;

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(d) illuminating the solid phase particle with the light to detect the presence of a fluorescent label indicative of binding of at least a portion of the sequence of the target nucleic acid to the oligonucleotide probe; and

(e) decoding the data on the memory elements to identify the sequence of the oligonucleotide probe.

E1 cont

32. The method of claim 31, further comprising analyzing the sequence of the oligonucleotide probe to which target nucleic acid is bound to determine at least a portion of the sequence of the target nucleic acid.

33. The method of claim 31, wherein the fluorescent label is bound to the target nucleic acid.

34. The method of claim 31, wherein the fluorescent label is added after the annealing step through a chain extension reaction using DNA polymerase.

35. The method of claim 34, wherein the fluorescent label is incorporated into the oligonucleotide probe.

36. The method of claim 34, wherein the chain extension reaction is performed with at least four dye-labeled deoxynucleotide triphosphates, each

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dye-labeled deoxynucleotide triphosphate having a different fluorescence emission from the others.

37. The method of claim 31, wherein the target nucleic acid is pre-treated before contacting the solid phase particle with the sample.

38. The method of claim 31, wherein the target nucleic acid is pre-treated after contacting the solid phase particle with the sample.

E1 cont

39. The method of claim 31, wherein the data comprise the sequence of the oligonucleotide probe.

40. The method of claim 31, wherein the data comprise characteristics of the sample.

41. A method of determining the sequence of target nucleic acid thought to contain a plurality of subsequences, comprising the steps of:

(a) providing at least two populations of solid phase particles, each particle comprising an oligonucleotide probe corresponding to one of the subsequences, attached directly or indirectly to an outer surface of the particle, and a transponder comprising memory elements containing data indicating the sequence of the attached oligonucleotide probe, a radio-frequency transmitter and a

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photovoltaic cell providing a source of electrical power for the memory elements and transmitter when illuminated by light; wherein a first population of solid phase particles has a different oligonucleotide probe sequence than a second population of solid phase particles;

(b) combining the sample and the at least two populations of the solid phase particles;

(c) providing conditions allowing annealing of at least a portion of the sequence of the target nucleic acid to complementary sequences on the oligonucleotide probes;

(d) illuminating the solid phase particles with the light to detect the presence of a fluorescent label indicative of binding of at least a portion of the target nucleic acid to the oligonucleotide probes; and

(e) decoding the memory elements to identify the sequence of the oligonucleotide probes.

E1 cont

42. The method of claim 41, wherein the solid phase comprises at least three populations of solid phase particles, each particle having a transponder and having an oligonucleotide probe corresponding to one of the subsequences attached to its surface, and each of the populations having a different oligonucleotide probe sequence.

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43. The method of claim 41, wherein the target nucleic acid is pre-treated before contacting the at least two populations of solid phase particles with the sample.

44. The method of claim 41, wherein the target nucleic acid is pre-treated after contacting the at least two populations of solid phase particles with the sample.

El, cancel

45. The method of claim 41, wherein the surface of the solid phase particles is glass, latex or plastic.

46. The method of claim 41, wherein the oligonucleotide probe is single-stranded.

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